

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Osamu Shimamura et al.

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Examiner/Art Unit: A. Arciero/1795

Title: LITHIUM-ION BATTERY AND METHOD FOR ITS
MANUFACTURE

REPLY BRIEF

M.S. Appeal
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter the following Reply Brief in response to the Examiner's Answer dated
June 6, 2010.

STATUS OF CLAIMS

Claims 1, 3-16 and 20-27 stand finally rejected under 35 U.S.C. § 103(a) by the Examiner as noted in the final Office Action mailed November 5, 2009. Claims 2, 17-19, 28 and 29 were canceled. The rejection of claims 1, 3-16 and 20-27 is appealed.

GROUNDΣ OF REJECTION TO BE REVIEWED ON APPEAL

1. Claims 1, 4-6, 8-14 and 20-23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hisamitsu et al. (US 2004/0126655) in view of Delnick (US 5,865,860);
2. Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Hisamitsu in view of Delnick and in further view of Kung (US 5,389,471);
3. Claims 15, 16, 24 -27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hisamitsu in view of Delnick and in further view of Triplett (US 3,566,985); and
4. Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Hisamitsu in view of Delnick and in further view of Munshi (US 6,645,675).

ARGUMENT

1. In the response to arguments in the Examiner's Answer on page 10, the Examiner states that Hisamitsu et al. clearly teaches that the patterns of the layers can be freely controlled and cites paragraphs [0055]-[0058]. However, "pattern" is clearly defined in Hisamitsu et al. as the order in which the layers of the cell are laid down. Paragraph [0040] describes FIG. 5, which shows "the patterns of the respective layers of the laminate type battery according to this embodiment, that is, ejection patterns of the fluids. The laminate type battery of this embodiment can be manufactured by forming each of the patterns shown in FIG. 5 one after another on the substrate from the first layer to the uppermost layer." Paragraph [0041] continues to describe how the "pattern" of layers is manufactured. "First of all, the insulating fluid is ejected from the inkjet printer onto the substrate and then dried, thus forming an insulating layer serving as the lowermost layer. Next, the conductive fluid and the insulating fluid are ejected onto the insulating layer and then dried, thus forming a collecting layer 212c serving as the second layer." Applicants submit that, based on these paragraphs and FIG. 5, Hisamitsu is clearly referring to the pattern in which the layers are formed, not a pattern in which individual insulating particles of the electrolyte layers are placed on a cathode or anode as shown in Applicants' Figs. 5-7.

2. On pages 10-11 in the Examiner's Answer in his response to arguments, the Examiner cites MPEP 2111.03, contending that absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." Applicants' specification speaks directly against the use of a separator, as separators add weight and thickness to the cell. (See ¶[0036]). One of the novel characteristics is the use of the individual insulating particles placed individually on the cathode or anode, with no separator used. The Examiner argues that Applicants' specification states that the electrolyte layer can contain more than the individual insulating particles and electrolytes and points to paragraph [0167] and [0168]. These paragraphs disclose the components of the insulating particles that are patterned on the cathode or anode with the ink jet printer as claimed. Nowhere is there disclosed any other component of the electrolyte layer other than the insulating particle ink and the electrolyte. As the basic and novel characteristics are made clear in the specification, the Examiner must construe "consisting essentially of" as limiting the scope of a claim to the specified materials

or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention.

3. The Examiner states on page 5 of the Examiner's Answer that Delnick discloses applying the separator and further filling the interstitial spaces of the separator. This is not accurate. Delnick clearly discloses that the bilayer 204, which includes separator 208, is placed on the substrate 202. (Col. 6, ll. 5-6) The electrolyte 216 is first supplied onto the upper surface 207 of the separator layer 208. The electrolyte 216 is then allowed to percolate down through the separator due to its porosity. (Col. 6, ll. 18-24). As noted by Applicants' paragraph [0040], the insulating particles 4a and electrolyte 4b are almost the same size and can be alternately placed in rows and columns with the ink jets. The processes are clearly different.

In conclusion, the Examiner's rejections of claims 1, 3-16 and 20-27 are improper and are reversible error. Reversal of the Examiner's rejections of these claims is respectfully requested.

Respectfully submitted,

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